

1   **Claims**

2    1.    A heat-cured furan binder system comprising:

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4           (a)    from 5 to 90 parts by weight of a furan resin;

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6           (b)    from 5 to 90 parts by weight of furfuryl alcohol; and

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8           (c)    from 1 to 90 parts by weight of a furan monomer or oligomer containing at  
9                   least two terminal hydroxymethyl groups,

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11           wherein said parts by weight are based upon 100 parts of binder resin.

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13    2.    The binder of claim 1 wherein the furan monomer or oligomer containing at least two  
14           terminal hydroxymethyl groups is a di-methylolated furan containing at least 50  
15           weight percent dimeric methylolated furan.

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17    3.    The binder of claim 2, which further comprises a polyvinyl acetate.

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19    4.    The binder of claim 3, which further comprises a silane.

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21    5.    The binder of claim 4, which further comprises resorcinol pitch.

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23    6.    The binder of claim 5, which comprises from 10 parts by weight to 80 parts by  
24           weight furan resin, from 10 parts by weight to 80 parts by weight furfuryl alcohol,  
25           from 5 parts by weight to 70 parts by weight methylolated furan, from 1 part by  
26           weight to 10 parts by weight polyvinyl acetate, from 0.1 part by weight to 0.5 part  
27           by weight silane, from 1 part by weight to 10 parts by weight resorcinol pitch, based  
28           upon 100 parts by weight of binder.

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30    7.    The binder of claim 6, which does not contain a polyol.

- 1 8. A foundry mix comprising in admixture:
- 2 (a) a major amount of a foundry aggregate;
- 3 (b) a catalytically effective amount of a salt of a strong inorganic or
- 4 organic acid; and
- 5 (c) a minor amount of a foundry binder of claims 1, 2, 3, 4, 5, 6, or 7.
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- 7 9. The foundry mix of claim 8 wherein the amount of latent acid curing catalyst is
- 8 from 10 parts by weight to 40 parts by weight based upon 100 parts binder.
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- 10 10. A process for preparing a workable foundry shape comprising:
- 11 A. forming a foundry mix of claim 9;
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- 13 B. shaping the foundry mix of A into a foundry shape;
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- 15 C. contacting the foundry shape of B with a source of heat at a temperature
- 16 sufficient to cure said mix; and
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- 18 D. allowing the foundry shape to harden into a workable foundry shape.
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- 20 11. A foundry shape prepared in accordance with claim 10.
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- 22 12. A method for preparing a metal casting comprising:
- 23 (a) fabricating a shape in accordance with claim 10;
- 24 (b) pouring metal, while in the liquid state, into and around said shape;
- 25 (c) allowing said metal to cool and solidify; and
- 26 (d) then separating the molded article.
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- 28 13. A metal casting prepared in accordance with claim 12.
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